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SOURCE Elektrichestvo, No 3, 1950.SOVIETS CLAIM PRIORITY FOR NEW COMMUTATION-ADJUSTING METHOD

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In the Electric Machines Laboratory of the Tomsk Electromechanical Institute of Railroad Engineers (TEMIIT) research on the commutation of dc machines has been carried on for over 10 years. During the last 4 years, it has been done using the electronic peak-voltmeter and the cathode-ray oscillograph exclusively. These instruments have proved to be the most suitable for investigating all commutation phenomena in dc machines. With their help, we have performed experiments showing that the classical concepts of commutation theory do not correspond with the actual phenomena and the role of commutating poles (interpoles) has been revealed. The broad outlines of the methodology of commutation calculations has been indicated and, finally, new methods of adjusting commutation have been worked out. These investigations were carried out in a definite sequence in accordance with a single procedure which we evolved in 1945.

The results of these investigations were published in Elektrichestvo (No 7 and 10, 1948 and No 7, 1949) and in the Trudy Tomskogo Instituta (No XII, XIII, and XIV, 1948).

And now, almost a year later, in the June 1949 issues of the American journals Electrical Engineering and General Electric Review, an article by R. T. Lundy describing the use of the electronic peak-volmeter, the cathode-ray oscillograph, and a radio receiver for adjusting the commutation of dc machines repeats in essence the problems discussed in the article "The Problem of Adjusting Commutation in DC Machines" published in the Trudy Tomskogo Instituta (Transactions of Tomsk Institute), No XIV, 1948.

Lundy's exposition begins with an examination of the existing method of adjusting commutation according to the sparkless zone. Every detail of this method, which is widely used in the USSR and abroad, was worked out by V. T. Kas'yanov and published by him in 1934. In describing this method, Lundy refers to the

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work of T. W. Schroeder and J. C. Aydelott published in 1941. After examining the existing method of adjusting commutation, Lundy states that he has found it possible to observe sparking at brushes by means of instruments, which should ensure more accurate commutation adjustment. However, the methods he gives for observing sparking at brushes by means of a cathode-ray oscillograph and a radio receiver are completely analogous to those we proposed in the above-mentioned article. Lundy's method of adjusting commutation with a peak-voltmeter differs from ours only in that he connects the peak-voltmeter between brushes of opposite sign in the machine, whereas we use only one of the working brushes.

In analyzing commutation adjustment by means of these instruments, we remarked that the advantages of our methods for detecting sparking were not only that they ensure more objective results in the sense of detecting the initial stage of brush sparking, but also that they make it possible to establish the nature of the sparking; in other words, to solve the problem of what factors -- commutational or mechanical -- lie at the root of the trouble. From the screen of the cathode-ray oscillograph it is also possible to establish what frequency -- slot or commutator -- the peaks of the voltage-drop curve have, if the sparking is due to commutation factors. At the end of our article we showed that the use of these instruments makes it possible not only to adjust commutation more accurately, but also to carry out more profound investigations into the operation of the dc commutator.

It is apparent, therefore, that Lundy has insufficient grounds for claiming priority in the problem of adjusting commutation by means of a peak-voltmeter, cathode-ray oscillograph and radio receiver.

Elektrichestvo Editor's Note:

The priority of Soviet scientists in the procedure for dc commutation adjustment is indisputable. This is confirmed once more in the above article.

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